

ABSTRACT OF THE DISCLOSURE

A diffusion media and a process for its fabrication are provided for addressing issues related to water management in electrochemical cells and other devices employing the diffusion media. In accordance with one embodiment of the present invention, a process for fabricating a diffusion media is provided. A diffusion media substrate is provided comprising a porous fibrous matrix defining first and second major faces. The substrate comprises an amount of carbonaceous material sufficient to render the substrate electrically conductive. A mesoporous layer is applied along at least a portion of one of the first and second major faces of the substrate. The mesoporous layer is applied to the substrate by providing a coating comprising a hydrophobic component, a hydrophilic component, and a pore forming agent. The substrate is free of fluorinated polymers outside of regions of the substrate carrying the mesoporous layer. The pore forming agent is decomposed such that the mesoporous layer is more porous than the diffusion media substrate.